TOPEX/POSEIDON PROJECT SATELLITE/SENSORS PERFORMANCE CHARACTERISTICS WORKSHOP #10

POD/MOE PERFORMANCE SUMMARY

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PVT

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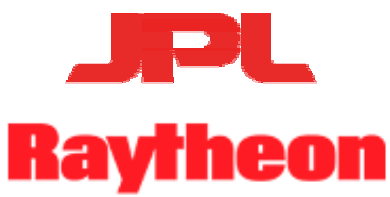

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  - **Process and Status**
- **Notable Events and Anomalies**

POE/MOE Comparison

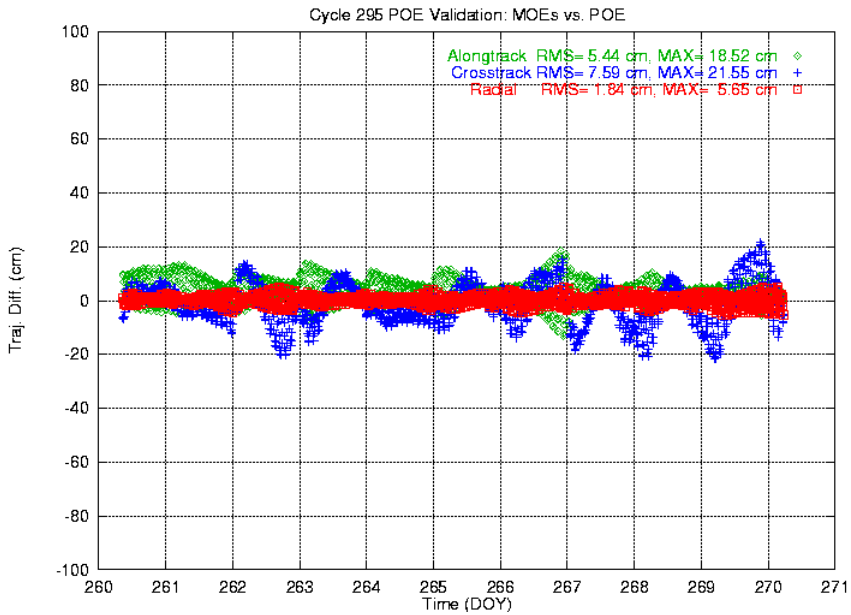
- **POE Cycles: 287-321 [28 Jun 2000 – 11 Jun 2001]**
  - **35 cycles delivered**
  - **Delivery ~30 days out-of-phase with current cycle**

- **NASA GSFC POE differenced with MOE**

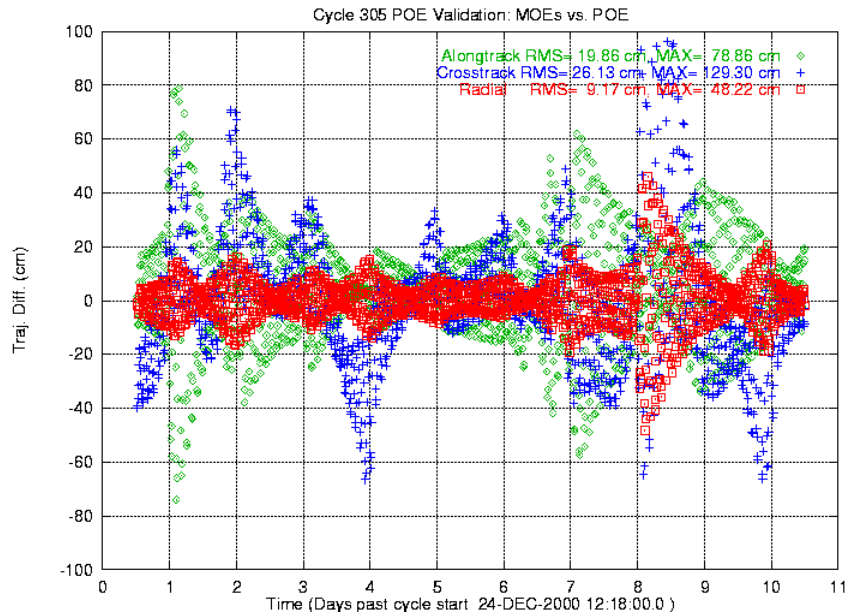
  Height (H), Cross Track (C), Along Track (L) values

- **Focus on Radial (H) differences**

POE/MOE Events & Anomalies

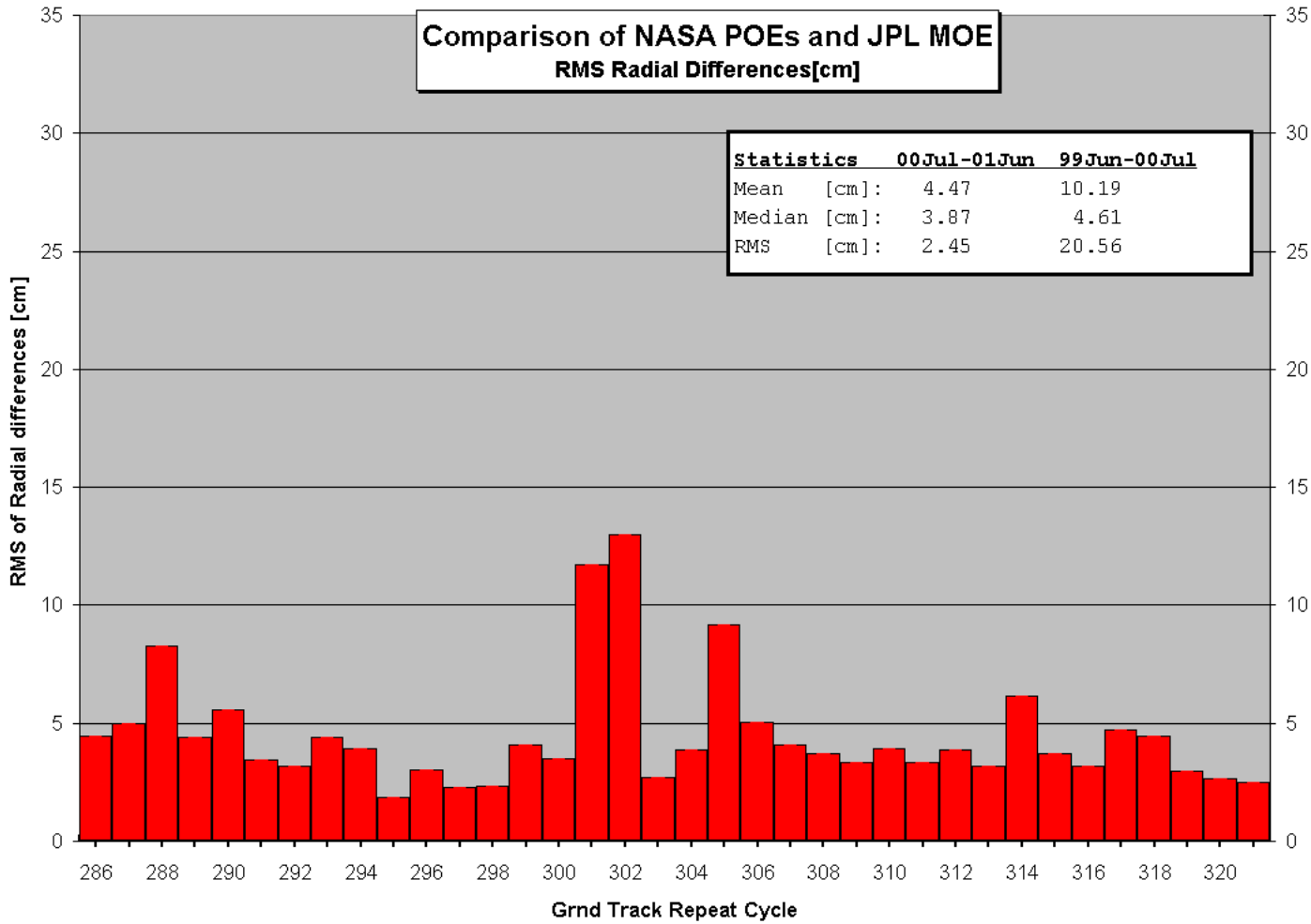


Cycle 295



Cycle 305

POE/MOE Comparison



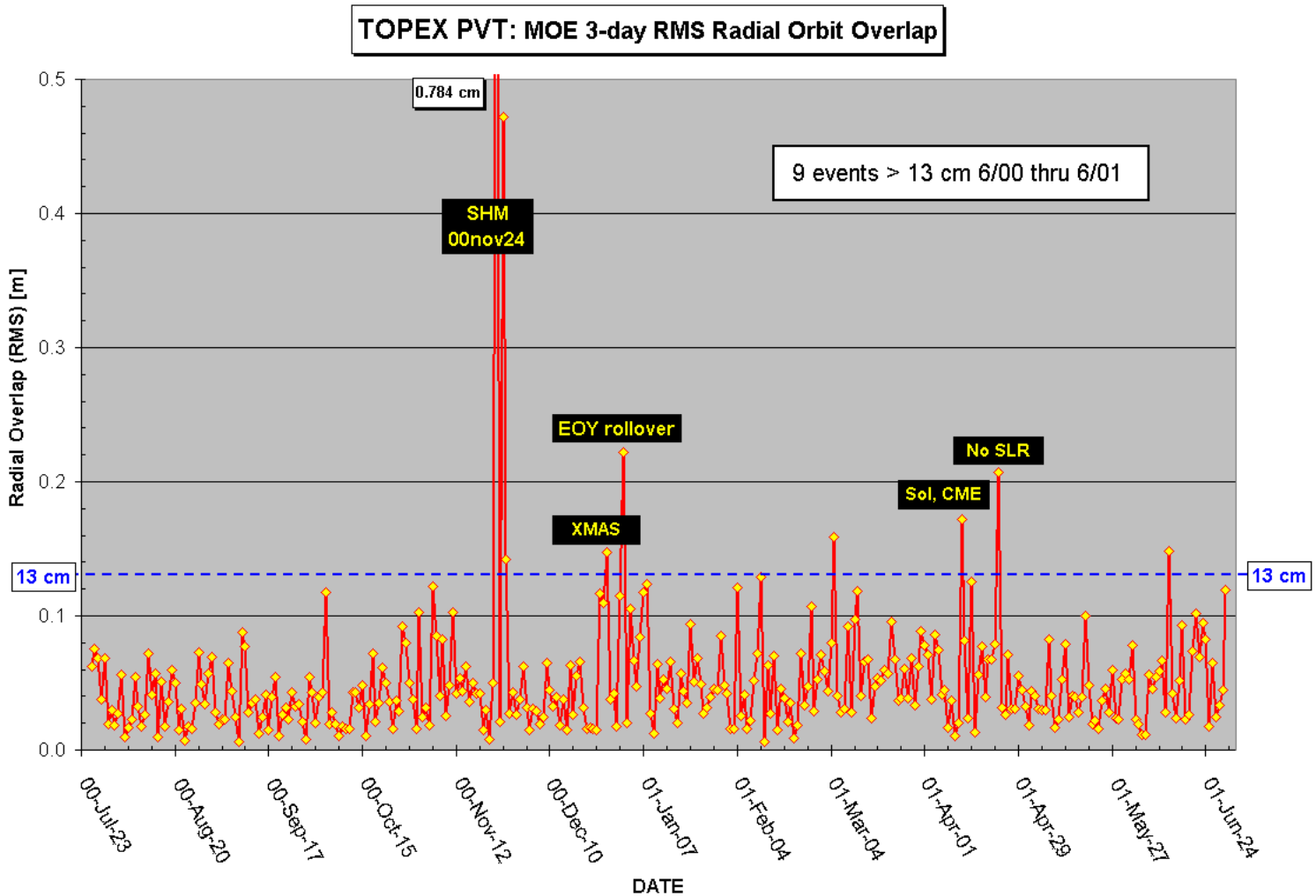
MOE Process

- **Daily 'cron' process on HP-UX new host 'theseus' at Raytheon**

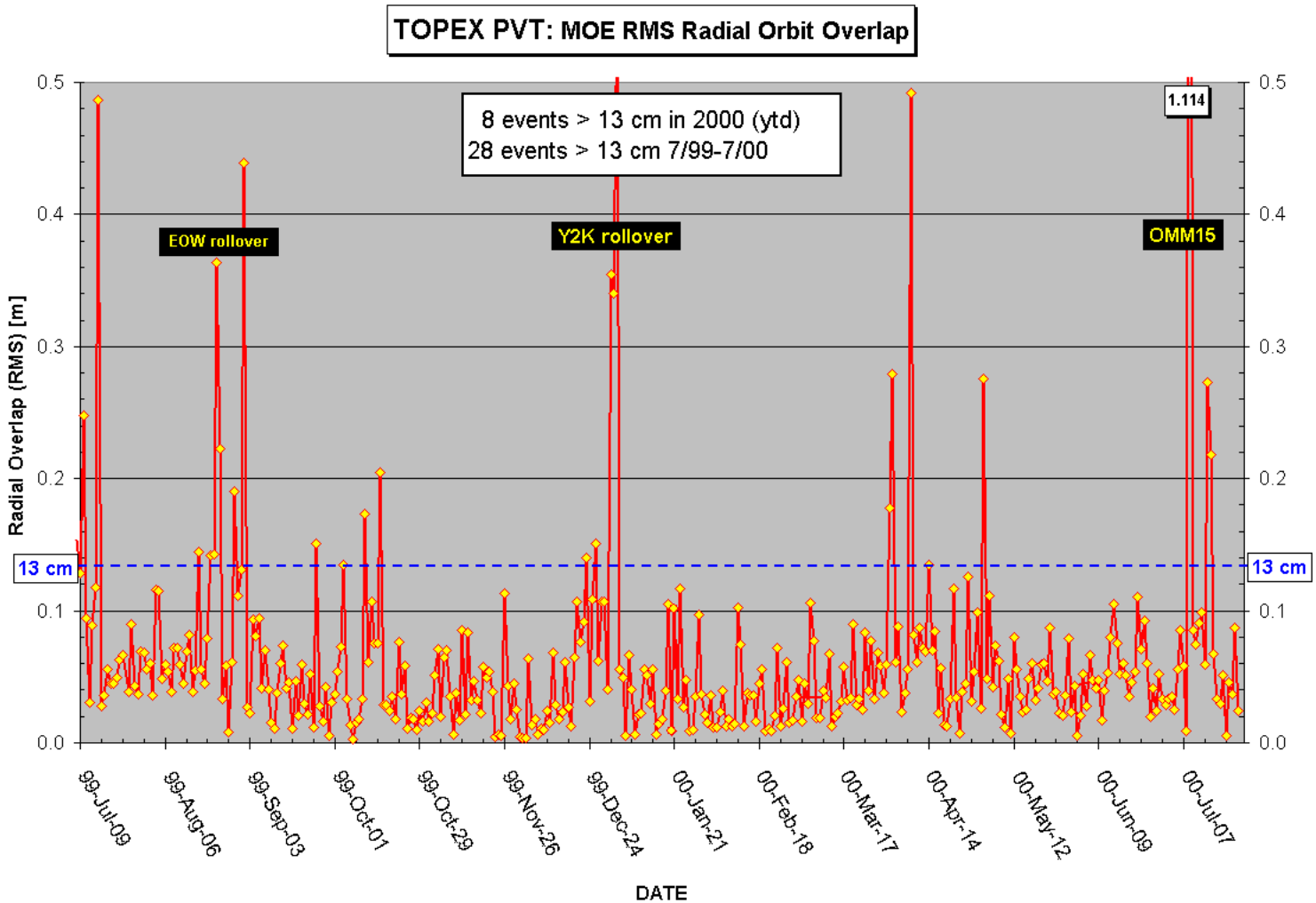
- **Sequence:**
  - **Process GPS satellite orbits and clocks from global ground station measurements ["-ggn_as"]**
  - **Process SLR-only: TOPEX 3-day orbit reconstruction overlapped with previous day reconstruction [72-hr 'orbits']**
  - **GPS+SLR combination: TOPEX 1-day orbit reconstruction overlapped with previous day reconstruction [30-hr 'orbits']**

- **Delivery preference given to GPS+SLR overlap reconstruction given tolerance < 13 cm Radial RMS overlap**

MOE Process + Results



MOE Process + Results

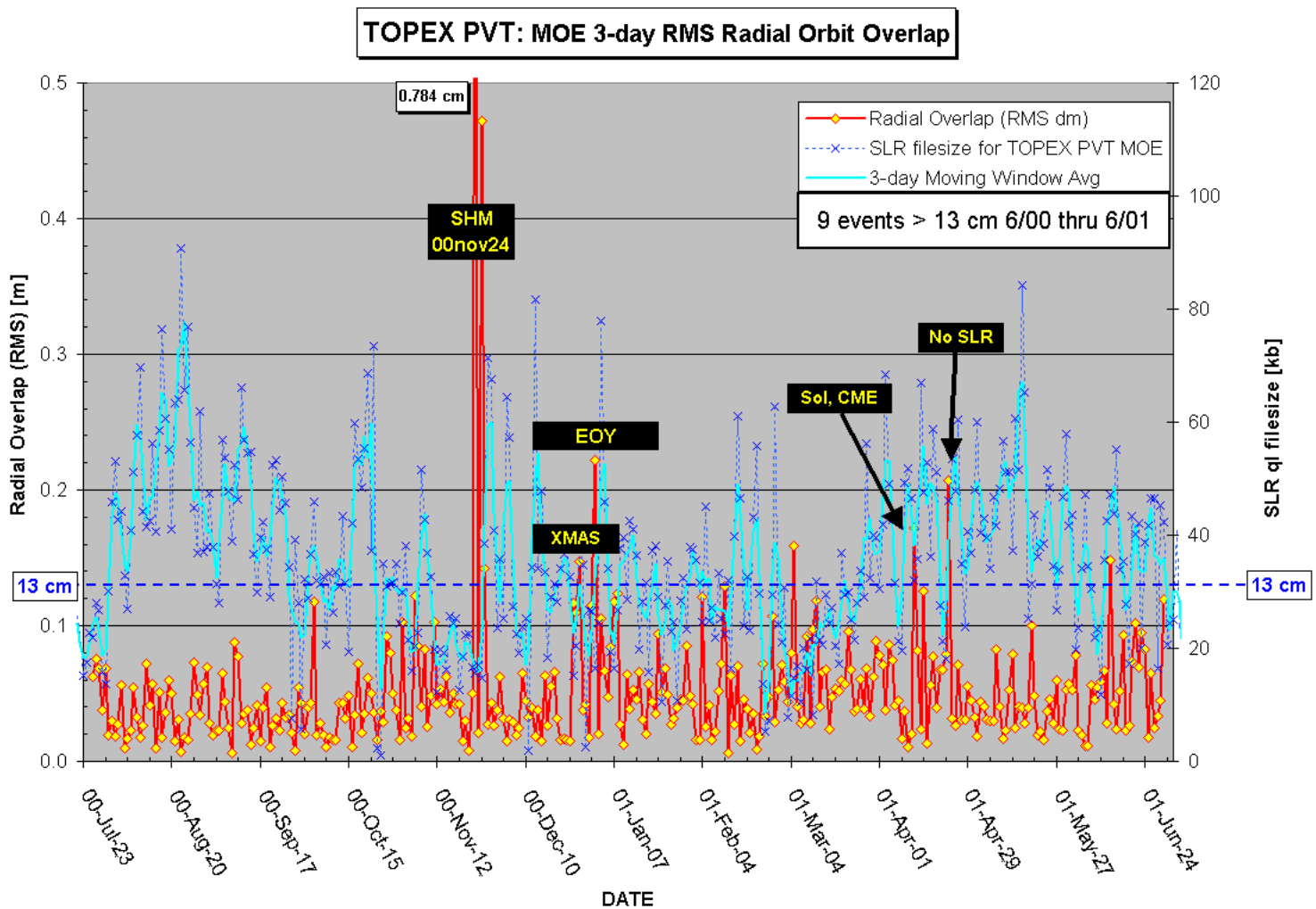


POE/MOE Events & Anomalies

- **Only 9 events exceed 13 cm Radial RMS overlaps goal this period compared to 28 excursions during previous period**
- **SHM event on 00nov24 caused excessive overlap differences (both POE/MOE)**
- **Holidays and EOY events are significant factor in poor reconstructions—typically due to paucity of SLR data**
- **Poor quality POE Cycle comparisons:**

Cycle	Comment
301-302	Safe Hold Mode (SHM) causes significant orbit overlaps
305	MOE events at Holidays: X-mas and New Year's Day
316-317	MOE events at Solar CME and minima in SLR data quantity:

POE/MOE Events & Anomalies



Dénouement

- **MOE results meet requirements:**
  - **9 events > 13 cm RMS Radial overlaps**
    (versus 28 during previous period)
- **POE-MOE validation is decisively better than previous period**
  - **One poor event: Cycles 301-302 boundary 00nov24-27**

    RMS Radial Diff. = 2.5 cm including all events
- **GPS+SLR based solutions: 239/340**
  SLR-only based solutions: 101/340 approx: 2:1 GPS+SLR results
- **Solar Activity during Solar Cycle 23 continues effect on GPS data—but less impact.**